

Translation

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference F-0000000403		FOR FURTHER ACTION	See Form PCT/IPEA/416
International application No. PCT/JP2004/004874	International filing date (day/month/year) 02.04.2004	Priority date (day/month/year) 04.04.2003	
International Patent Classification (IPC) or national classification and IPC			
Applicant PHOTO-CATALYTIC MATERIALS INC.			

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.	
2. This REPORT consists of a total of <u>7</u> sheets, including this cover sheet.	
3. This report is also accompanied by ANNEXES, comprising:	
a. <input checked="" type="checkbox"/> (sent to the applicant and to the International Bureau) a total of <u>4</u> sheets, as follows:	
<input checked="" type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).	
<input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.	
b. <input type="checkbox"/> (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s))	
_____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).	
4. This report contains indications relating to the following items:	
<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input checked="" type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input checked="" type="checkbox"/> Box No. VII	Certain defects in the international application
<input checked="" type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand	Date of completion of this report
Name and mailing address of the IPEA/JP	Authorized officer
Facsimile No.	Telephone No.

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Box No. I

Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.
- ☐ This report is based on translations from the original language into the following language _____, which is the language of a translation furnished for the purposes of:
- ☐ international search (Rule 12.3 and 23.1(b))
- ☐ publication of the international application (Rule 12.4)
- ☐ international preliminary examination (Rule 55.2 and/or 55.3)
2. With regard to the elements of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report)*:
- ☐ the international application as originally filed/furnished
- ☒ the description:
- pages 1, 2, 4-10 as originally filed/furnished
- pages* 3, 3/1 received by this Authority on 04.02.2005
- pages* _____ received by this Authority on _____
- ☒ the claims:
- nos. 3-9 as originally filed/furnished
- nos.* _____ as amended (together with any statement) under Article 19
- nos.* 1, 2 received by this Authority on 04.02.2005
- nos.* _____ received by this Authority on _____
- ☒ the drawings:
- sheets fig. 1-3 as originally filed/furnished
- sheets* _____ received by this Authority on _____
- sheets* _____ received by this Authority on _____
- ☐ a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.
3. ☐ The amendments have resulted in the cancellation of:
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____
4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
- ☐ the description, pages _____
- ☐ the claims, nos. _____
- ☐ the drawings, sheets/figs _____
- ☐ the sequence listing (*specify*): _____
- ☐ any table(s) related to sequence listing (*specify*): _____

* If item 4 applies, some or all of those sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application

☒ claims Nos. 2, 3

because:

☐ the said international application, or the said claims Nos. _____
relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _____
are so unclear that no meaningful opinion could be formed (*specify*):

☒ the claims, or said claims Nos. 2, 3 _____ are so inadequately supported
by the description that no meaningful opinion could be formed.

☐ no international search report has been established for said claims Nos. _____

☐ the nucleotide and/or amino acid sequence listing does not comply with the standard provided for in Annex C of the Administrative Instructions in that:

the written form

☐ has not been furnished

☐ does not comply with the standard

the computer readable form

☐ has not been furnished

☐ does not comply with the standard

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in computer readable form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See Supplemental Box for further details.

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement		
1. Statement			
Novelty (N)	Claims	1, 4-9	YES
	Claims		NO
Inventive step (IS)	Claims	1, 4-9	YES
	Claims		NO
Industrial applicability (IA)	Claims	1, 4-9	YES
	Claims		NO
2. Citations and explanations (Rule 70.7)			
Document 1: JP 2003-001116 A (Daikin Ind., Ltd.), 07 January 2003			
<p>The inventions set forth in claims 1 and 4 to 9 are novel and involve an inventive step in relation to document 1 cited in the international search report.</p> <p>Document 1 discloses a titanium dioxide photocatalyst that exhibits a decomposition function when irradiated with ultraviolet rays that have a wavelength of 254 nm which is superior to the decomposition function that it exhibits when irradiated with ultraviolet rays that have a wavelength of 365 nm (refer to claims 2 to 5; paragraphs [0008], [0013] and [0039]; and fig. 1). Therein, document 1 does not disclose the peak extinction wavelength of the photocatalyst, but it is possible to deduce that the peak extinction wavelength is within the far ultraviolet range of the spectrum in the light of the fact that the photocatalyst exhibits a superior decomposition function when irradiated with far ultraviolet light.</p> <p>However, document 1 does not make any disclosures in relation to the crystalline forms of the titanium dioxide crystals that are produced. Furthermore, the</p>			

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Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
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titanium dioxide that is disclosed in document 1 cannot be considered to have a crystalline form that includes spindle-shaped crystals, even with consideration of common technical knowledge.

As a result, the titanium dioxide photocatalyst that is set forth in claim 1 of the present application is different from the titanium dioxide photocatalyst that is disclosed in document 1 as an invented object. In addition, the titanium dioxide photocatalyst that is set forth in claim 1 of the present application would not have been obvious in the light of document 1, even to a person skilled in the art.

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

- a) It is thought that the disclosure "fig. 2" on page 4 (line 15) is incorrect, and should instead read "fig. 3." Likewise, it is thought that the disclosures "fig. 1" and "fig. 2" on page 7 (lines 17 to 18) are incorrect, and should instead read "fig. 2" and "fig. 3," respectively.

- b) The disclosure "susu to" on page 6 (line 21) of the Japanese language text is thought to be a typographical error, and should instead read "susumu to."

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

a) No search was carried out in relation to claims 2 to 3, as is indicated above, for the following reasons.

Claim 2 sets forth a feature wherein the titanium dioxide for forming the thin film has a crystalline form that includes a mixture of spindle-shaped crystals and cubic crystals. However, although the description indicates that such a mixture is acceptable (page 4, lines 15 to 16), it does not present any method by which said mixture may be obtained; furthermore, it is impossible to understand the nature of the aforementioned mixture due to the fact that the titanium dioxide is composed almost entirely of spindle-shaped crystals, as can be seen from fig. 3, which is a photograph of the titanium dioxide that was produced according to the examples. As a result, the feature wherein the titanium dioxide has a crystalline form that includes a mixture of spindle-shaped crystals and cubic crystals cannot be said to be fully supported in the description. The same is true in relation to claim 3, which cites claim 2.

b) The disclosure "control the absorption edge...[omitted]...as illustrated in fig. 2 (line B)" on page 5 (lines 15 to 17) does not conform to the illustration in fig. 2.

c) It is unclear exactly what types of filters are being referred to in the disclosures "No. 327" and "No. 2" from the "filter used" column of table 1 on page 8.